

REMARKS

Pending Claims

Claims 23, 41, 46, 52, 58-59, 61, 67, 68, and 70 have been amended in order to more clearly describe Applicant's invention. No new matter has been added. Claims 25-26, 43 and 53 have been cancelled in view of the amendments, and claims 27-32, originally dependent on claim 25, have been amended to depend from claim 23. Claims 91-110 were previously withdrawn from consideration in view of the restriction requirement. Claims 1-24, 27-42, 44-48, 50-52, 54-90, and 91-110 are pending.

Summary of the Invention

The present invention in part relates to printing plates comprising a substrate and a radiation-absorptive layer, wherein the radiation-absorptive layer comprises at least one modified pigment product. Methods of imaging printing plates are also disclosed.

Objections of the Amendment to the Specification under 35 U.S.C. § 132

The Examiner has objected to Applicants' amendment to the specification as introducing new matter. Applicants respectfully disagree.

In paragraph 4 of the Office Action, the Examiner states that adding "quaternary ammonium compound" to Arquad in paragraphs [0090], [0093], [0104], and [0105] is not supported by the original disclosure and that Applicants are required to cancel the new matter in their reply. The Examiner also notes that if Applicants submit references showing that the Arquad DMHTB was, at the time of filing, what was added by Applicants, then the addition of "quaternary ammonium compound" would be acceptable.

Applicants have attached to this response a copy of a record from the U.S. Patent and Trademark Office's Trademark Electronic Search System for the word mark "Arquad" identifying the goods and services associated with the mark as "quaternary ammonium compound" as early as April 2, 1965. Therefore, Applicants believe that no new matter has been added by including "quaternary ammonium compounds" and respectfully requests that this objection be withdrawn.

Rejection of Claims under 35 U.S.C. § 112, Second Paragraph

Claims 58-64 and 67-71

The Examiner has rejected the above-identified claims as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants respectfully disagree.

In paragraphs 6 and 7 of the Office Action, the Examiner states that claims 58-64 and 67-71 reference the radiation absorptive layer further comprising a polymer. The Examiner further states that, since claims 56 and 65 already comprised a polymer, i.e., the modified pigment product is or at least is comprised of a polymer (EI is the polymer referenced in claim 56 and SMA is the polymer referenced in claim 65) by definition then what is meant by further comprising a polymer is confusing. The Examiner adds that there is no clear antecedent basis for the polymer being further defined by claims 59-62 or 68-71 since it is not clear if two polymers or one is present in the narrowest interpretation of claim 58 and claim 67 (please note correction from the Examiner's statement in paragraph 7). The Examiner concludes by stating that, for examination purposes, it is assumed that Applicants intended the polymer of claims 56 and 67 to be a polymer separate from the modified pigment product.

In paragraph 8 of the Office Action, the Examiner states that Applicants' previous argument that the phrase "further comprises a polymer" is clear based on the application is not persuasive because Applicants do not state why the polymer that is part of the modified pigment

product is not a polymer. The Examiner questions whether the “further” polymer is a polymer beyond that of the pigment polymer or the pigment polymer is a “further” polymer.

Applicants believe the phrase “further comprising a polymer” is clear based on the present application and, as written, refers to a polymeric material beyond that of the modified pigment product. For example, the printing plate of claims 58 and 67 comprise a radiation-absorptive layer which itself comprises a modified pigment product having attached at least one organic group. In claim 58, this group is represented by the formula $-X-Sp-[EI]R$ while in claim 67 the group is represented by the formula $-X-Sp-[SMA]R$. The radiation-absorptive layer also comprises a polymer. These polymeric materials are discussed in more detail in paragraph [0068] of the present application which states that “[t]he polymer is chosen to provide the plate with desirable physical and chemical properties such as flexibility, hardness, and ink compatibility.” Also, paragraph [0071] states that “[w]hile not wishing to be bound by any particular theory, it is believed that the modified pigment products described above interact with the polymeric resin or binder, in particular, phenolic polymers, in such a way as to strengthen the hydrogen bonding network of the polymer.” This is therefore a description of a polymeric material that would be one in addition to that of the modified pigment. Furthermore, dependent claims 59-60 refer to the polymer as a phenolic polymer while dependent claims 61-62 refer to the polymer as an acrylic polymer. Since the modified pigment product disclosed in claim 58, from which these sets of claims depend, comprise a pigment having attached at least one organic group comprising EI, and since EI is neither a phenolic polymer nor an acrylic polymer, this is further indication that the term “polymer” for the radiation-absorptive layer does not refer to the polymer attached to the modified pigment. A similar argument would hold comparing claim 65 and claims 68-71.

Therefore, Applicants believe that claims 58-64 and 67-71 are not indefinite and the meaning of the phrase “further comprising a polymer” is clear as written, referring to a polymer that is in addition to the polymer of the modified pigment product. However, in order to more clearly describe Applicants’ invention, claims 58 and 67 have been amended to recite that the radiation-absorptive layer further comprises an additional polymer. Claims 59 and 61, which

depend directly from claim 58, and claims 68 and 70, which depend directly from claim 67, have also been amended to provide proper antecedent basis. Applicants therefore respectfully request that the rejection of these claims be withdrawn.

Rejection of Claims under 35 U.S.C. § 103(a)

Claims 41-48 and 52-55

The Examiner has rejected the above-identified claims as being unpatentable over Johnson et al. (WO 99/51690) as evidenced by Grabley et al. (WO 98/31550). The Examiner has also rejected the above-identified claims as being unpatentable over Johnson et al (U.S. Patent No. 6,336,965) as evidenced by Grabley et al. (WO 98/31550). Applicants respectfully disagree.

In paragraphs 9 and 10 of the Office Action, the Examiner states that either of the Johnson et al. references, in Example 15 and Example 2 in the making of 2E, makes a printing plate that has all but the acrylate resins of claims 41-45, though these references teach the use of a much broader group of materials for their printing plate. The Examiner further states that Grabley et al., fully incorporated into either Johnson et al. reference, teaches using a pigment mixed with a polyacrylate resin in the radiation absorbing layer, and other acrylate ester resins as well as (meth)acrylate acid resins are listed as binders for the radiation absorbing pigment layers.

The Examiner concludes that, since Grabley et al. is incorporated into either Johnson et al. reference, then the plates of Grabley et al., wherein the modified pigments of either Johnson et al. reference are used instead of those disclosed in Grabley et al., makes prima facie obvious Applicants' printing plates of claims 41-45 because either Johnson et al. reference teaches their use together. The Examiner also concludes that, wherein, according to either Johnson et al. reference, polymeric groups of polystyrene, styrene copolymers, and acrylic polymers are used to modify the pigments, the printing plates of either Johnson et al. reference make prima facie obvious Applicants' plates of claims 46-48 and 52-55.

In paragraph 11, the Examiner states that Applicant's previous arguments have been considered by they are not persuasive. Specifically, the Examiner states that it "must be

recognized that any judgement on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper." The Examiner concludes that since Johnson points to Grabley et al. for conventional additives, then the addition of any of the conventional ingredients of Grabley with the elements of Johnson et al. would have been prima facie obvious as conventional additives.

Regarding claims 41-45, as amended, claim 41 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula $-X-Sp-[A]_pR$. A represents an alkylene oxide group of from about 1 to about 12 carbons. Thus, claim 41 teaches a particular combination of a specific type of acrylic polymer and a specific type of modified pigment product.

Johnson et al. discloses, in one embodiment, a printing plate having a radiation-absorptive layer comprising a modified pigment. In particular, Example 15 teaches the preparation of a printing plate using the modified pigment of Example 2E, which is prepared by the attachment of a polyethylene glycol-based surfactant on carbon black. However, the printing plate that is taught in this example does not include an acrylic polymer and, more importantly, an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof. Thus, while Johnson et al. teaches that modified pigments can be used along with other conventional polymeric resins and binders, this is a generic teaching of types of components that are used in printing plates. There is no teaching or suggestion that the specific types of acrylic polymer resins or binders should or could be used in combination with the modified pigment shown in Example 2E.

In order to cure this deficiency, the Examiner refers to Grabley et al., which is incorporated by reference in Johnson et al. for describing details of "conventional components and techniques" that can be used in printing plates. Grabley et al. describes a recording material which includes at least one IR-absorbing layer comprising at least one IR-absorbing material and

at least one polymeric, organic binder. However, while Grabley et al. mentions a variety of components for the IR-absorbing layer, including pigments, dyes, and binders, there is no teaching or suggestion in Grabley et al. of specific types of pigment products to be used in combination with specific types of polymeric resins, and, in particular, an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof.

Therefore, while Johnson et al. teaches various modified pigments used in printing plates, and Grabley et al. shows various conventional ingredients that can be used in printing plates, these are generic disclosures. No guidance is provided in these references, either alone or in combination, as to how to choose specific combinations of modified pigments and polymeric resins or binders. More particularly, there is no teaching or suggestion that would lead one skilled in the art to combine a modified pigment having attached at least one organic group having the formula $-X-Sp-[A]_pR$ and an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof, given the disclosures of Johnson et al. and Grabley et al.

Applicants believe that the only way to have arrived at the combination of the specific type of modified pigment product and specific type of polymer disclosed in present claim 41 is from the present disclosure. In particular, paragraph [0071] of the present application states that it is believed that the modified pigment products “interact with the polymeric resin or binder” and that this interaction “strengthen[s] the hydrogen bonding network of the polymer.” In addition, paragraph [0073] of the present application describes details of the advantages of the plates of the present invention and describes how to choose modified pigment products for specific types of polymeric resins or binders.

Since, as stated by the Examiner, obviousness reconstruction is only proper if it does not include knowledge gleaned only from the applicant's disclosure, Applicants therefore believe that claim 41 is patentable over Johnson et al. as evidenced by Grabley et al. Claims 42, 44, and 45, which depend from claim 41, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. as evidenced by Grabley et al. Claim 43 has been cancelled by this amendment, making the rejection of this claim moot.

Regarding claims 46-48 and 52-55, as amended, claim 46 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula $-X-Sp-[Vinyl]_pR$. Vinyl represents an acrylic or styrenic homo- or copolymer comprising repeating substituted or unsubstituted acrylic or styrene monomer units. The polymer is an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof or a phenolic polymer. Thus, claim 46 teaches a specific combination of polymer and a specific modified pigment product.

As discussed in more detail above, while Johnson et al. teaches various modified pigments used in printing plates, and Grabley et al. mentions various conventional ingredients that can be used in printing plates, these are generic disclosures. No guidance is provided in these references, either alone or in combination, as to how to choose specific combinations of modified pigments and polymeric resins or binders. The present disclosure provides this teaching, and Applicants believe that the only way to have arrived at the combination of the specific type of modified pigment product (that is, one that comprises a pigment having attached at least one organic group having the formula $-X-Sp-[Vinyl]R$) and a specific type of polymer (that is, a phenolic polymer or an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof) recited in present claim 41 is from the present application.

Since, as stated by the Examiner, obviousness reconstruction is only proper if it does not include knowledge gleaned only from the applicant's disclosure, Applicants therefore believe that claim 46 is patentable over Johnson et al. as evidenced by Grabley et al. Claims 47, 48, 52, 54, and 55, which depend from claim 46, disclose further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. as evidenced by Grabley et al. Claim 53 has been cancelled by this amendment, making the rejection of this claim moot.

Finally, regarding the rejection over Johnson et al. (U.S. Patent No. 6,336,965), the Examiner states in paragraph 10 of the Office Action that this reference has a common inventor with the present application and constitutes prior art only under 35 U.S.C. 102(e) based on the

earlier effective U.S. filing date. Since Johnson et al. and the present application are owned by the same assignee, namely Cabot Corporation, 35 U.S.C. §103(c) applies and therefore, this rejection is not proper. Copies of the recorded Assignments for the respective applications are attached for the Examiner's convenience. Applicants respectfully request that the rejection over U.S. Patent No. 6,336,965 be withdrawn.

Therefore, Applicants believe that claims 41-48 and 52-55 are patentable over Johnson et al. as evidenced by Grabley et al., and respectfully request that these rejections be withdrawn.

Claims 23-48 and 50-55

The Examiner has rejected the above-identified claims as being unpatentable over Johnson et al. (WO 99/51690) in view of Van Damme et al. (EP 0 803 772 A2). The Examiner has also rejected the above-identified claims as being unpatentable over Johnson et al. (U. S. Patent No. 6,336,965) as evidenced by Van Damme et al. (EP 0 803 772 A2). Applicants respectfully disagree.

In paragraph 12 and 13 of the Office Action, the Examiner states that either Johnson et al. reference, in the SUMMARY OF THE INVENTION, discloses that modified pigment products are provided which are capable of improving the dispersibility and dispersion stability of the pigment in compositions and formulations including those used to manufacture lithographic printing plates such as infrared or near-infrared laser imageable printing plates, and carbon blacks are among those adapted by Johnson et al. The Examiner further states that Van Damme et al., which is cited by Johnson et al., teaches the formation of thermosensitive layers wherein phenolic resins are mixed with pigments like carbon black to form laser imageable layers that become soluble or swellable in aqueous medium, including phenol-formaldehyde, polymers, polyvinyl phenols which are polyvinyl hydroxystyrene, and polyacrylic acids. The Examiner concludes that, with respect to claims 23-48 and 50-55, the use of the modified carbon black pigments of Johnson et al. in the plates of Van Damme et al. would have been obvious to obtain a more stable dispersion of pigment.

In paragraph 14, the Examiner states that Applicant's previous arguments have been considered by they are not persuasive. Specifically, the Examiner states that it "must be recognized that any judgement on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper." The Examiner concludes that, while Van Damme et al. does not reference the need for improved dispersibility, Johnson et al. does and therefore Applicants' arguments do not remove the reason modifying Van Damme et al. plates in view of Johnson et al. would make obvious the instant invention.

Regarding claims 23-35, as amended, claim 23 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a phenolic polymer and at least one modified pigment product. The modified pigment product comprises a pigment having attached at least one organic group, wherein the organic group comprises at least one ionic group, at least one ionizable group, or a mixture thereof. Thus, claim 23 recites the specific combination of phenolic polymer and a specific type of modified pigment product.

Johnson et al. discloses, in one embodiment, modified pigment products which have improved dispersibility and dispersion stability in compositions and formulations such as printing plates. Various types of modified pigment products are disclosed, including those having attached groups comprising the formula $-X-[N\text{Ion}]_pR$, $-X[A]_pR$, $-X-[(-CH_2)_m-O-]_pR$, and $-X[\text{polymer}]R$. Thus, Johnson et al. teaches that modified pigment products that have these types of attached groups are capable of providing improved dispersion stability and dispersion stability in compositions and formulations. There is no teaching or suggestion that modified pigments having attached ionic groups, ionizable groups, or mixtures would improve dispersion stability, nor that these types of modified pigments should or could be used in combination with a specific type of polymer, namely a phenolic polymer.

Van Damme et al., which is incorporated by reference in Johnson et al., describes a printing plate having a radiation-absorptive layer that has an infrared pigment dispersed in a

binder. A preferred pigment is carbon black and preferred polymeric binders include aqueous swellable or soluble binders such as homo- or copolymers of (meth)acrylic acid and polymers containing phenolic hydroxy groups (including polyvinylphenols). However, there is no teaching in Van Damme et al. that specific types of pigments should be used in combination with any of the preferred polymeric binders, particularly to achieve any target dispersion property or dispersion-related property. Furthermore, there is no teaching or suggestion in Van Damme et al. that the dispersibility of the pigment is an issue, and one skilled in the art would therefore not be motivated to attempt to replace any of components mentioned therein.

Therefore, while Johnson et al. teaches various types of dispersible modified pigments used in printing plates, and Van Damme et al. shows various conventional ingredients that can be used in printing plates, no guidance is provided in these references, either alone or in combination, as to how to choose specific combinations of modified pigments and polymeric resins or binders. More particularly, there is no teaching or suggestion that would lead one skilled in the art to combine a modified pigment having an attached ionic group, ionizable group, or mixture thereof and a phenolic polymer, given the disclosures of Johnson et al. and Van Damme et al.

Applicants believe that the only way to have arrived at the combination of the specific type of modified pigment product and the specific type of polymer recited in present claim 23 is from the present application. In particular, paragraph [0071] of the present application states that it is believed that the modified pigment products “interact with the polymeric resin or binder” and that this interaction “strengthen[s] the hydrogen bonding network of the polymer.” In addition, paragraph [0073] of the present application describes details of the advantages of the plates of the present invention and describes how to choose modified pigment products for specific types of polymeric resins or binders. Also, several of the Examples, including Examples 5-8, describe the combination of a modified pigment product having attached ionic groups, ionizable groups, or mixtures thereof, with a phenolic resin.

Since, as stated by the Examiner, obviousness reconstruction is only proper if it does not include knowledge gleaned only from the applicant's disclosure, Applicants therefore believe

that claim 23 is patentable over Johnson et al. in view of Van Damme et al. Claims 24 and 27-35, which depend either directly or indirectly from claim 23, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. in view of Van Damme et al. Claims 25 and 26 have been cancelled by this amendment, making the rejection of these claims moot.

Regarding claims 36-40, claim 36 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a phenolic polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula $-X-Sp-[A]_pR$. A represents an alkylene oxide group of from about 1 to about 12 carbons. Thus, claim 36 recites a specific combination of phenolic polymer and a specific modified pigment product.

As discussed in more detail above, while Johnson et al. teaches various types of dispersible modified pigments used in printing plates, and Van Damme et al. describes various conventional ingredients that can be used in printing plates, no guidance is provided in these references, either alone or in combination, as to how to choose specific combinations of modified pigments and polymeric resins or binders. The present application provides this teaching, and Applicants believe that the only way to have arrived at the combination of the specific type of a modified pigment product (that is, one that comprises a pigment having attached at least one organic group having the formula $-X-Sp-[A]_pR$) and a specific type of polymer (that is, a phenolic polymer) recited in present claim 36 is from the present application.

Since, as stated by the Examiner, obviousness reconstruction is only proper if it does not include knowledge gleaned only from the applicant's disclosure, Applicants therefore believe that claim 36 is patentable over Johnson et al. in view of Van Damme et al. Claims 37-40, which depend from claim 36, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. in view of Van Damme et al.

Regarding claims 41-45, as amended, claim 41 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises an acrylic

polymer comprising acrylic acid, methacrylic acid, or salts thereof and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula $-X-Sp-[A]_pR$. A represents an alkylene oxide group of from about 1 to about 12 carbons. Thus, claim 41 recites a particular combination of a specific type of acrylic polymer and a specific type of modified pigment product.

As discussed in more detail above, Johnson et al. discloses, in one embodiment, modified pigment products which have improved dispersibility and dispersion stability in compositions and formulations such as printing plates. Various types of modified pigment products are disclosed. Van Damme et al., which is incorporated by reference in Johnson et al., describes a printing plate having a radiation-absorptive layer that comprises an infrared pigment dispersed in a binder. A preferred pigment is carbon black and preferred polymeric binders include aqueous swellable or soluble binders such as homo- or copolymers of (meth)acrylic acid and polymers containing phenolic hydroxy groups (including polyvinylphenols).

However, there is no teaching in Van Damme et al. of the use of an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof. Therefore, Applicants believe that one skilled in the art would not be lead to combine a modified pigment product comprising a pigment having attached at least one organic group represented by the formula $-X-Sp-[A]_pR$ and an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof, given the disclosure of Johnson et al. and Van Damme et al.

Applicants therefore believe that claim 41 is patentable over Johnson et al. in view of Van Damme et al. Claims 42, 44, and 45, which depend from claim 41, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. in view of Van Damme et al. Claim 43 has been cancelled by this amendment, making the rejection of this claim moot.

Regarding claims 46-48 and 50-51, as amended, claim 46 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises a polymer and at least one modified pigment product comprising a pigment having attached at least one organic group represented by the formula $-X-Sp-[Vinyl]_pR$. Vinyl

represents an acrylic or styrenic homo- or copolymer comprising repeating substituted or unsubstituted acrylic or styrene monomer units. The polymer is an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof or a phenolic polymer. Thus, claim 46 recites a specific combination of polymer and a specific modified pigment product.

As discussed in more detail above, while Johnson et al. teaches various types of dispersible modified pigments used in printing plates, and Van Damme et al. describes various conventional ingredients that can be used in printing plates, no guidance is provided in these references, either alone or in combination, as to how to choose specific combinations of modified pigments and polymeric resins or binders. The present application provides this teaching, and Applicants believe that the only way to have arrived at the combination of the specific type of a modified pigment product (that is, one that comprises a pigment having attached at least one organic group having the formula $-X-Sp-[Vinyl]_pR$) and a specific type of polymer (that is, a phenolic polymer or an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof) disclosed in present claim 46 is from the present application.

Since, as stated by the Examiner, obviousness reconstruction is only proper if it does not include knowledge gleaned only from the applicant's disclosure, Applicants therefore believe that claim 46 is patentable over Johnson et al. in view of Van Damme et al. Claims 47, 48, 50, and 51, which depend directly or indirectly from claim 46, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. in view of Van Damme et al.

Regarding claims 52-55, as amended, claim 52 depends from claim 46 and recites a further embodiment in which the polymer is an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof. As discussed in more detail above, Johnson et al. discloses, in one embodiment, various types of modified pigment products which have improved dispersibility and dispersion stability in compositions and formulations such as printing plates. Van Damme et al., which is incorporated by reference in Johnson et al., describes a printing plate having a radiation-absorptive layer that comprises an infrared pigment dispersed in a binder. However, there is no teaching in Van Damme et al. of the use of an acrylic polymer comprising

acrylic acid, methacrylic acid, or salts thereof. Therefore, Applicants believe that one skilled in the art would not be lead to combine a modified pigment product comprising a pigment having attached at least one organic group represented by the formula $-X-Sp-[Vinyl]_pR$ and an acrylic polymer comprising acrylic acid, methacrylic acid, or salts thereof, given the disclosure of Johnson et al. and Van Damme et al.

Applicants therefore believe that claim 52 is patentable over Johnson et al. in view of Van Damme et al. Claims 54 and 55, which depend directly from claim 52, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Johnson et al. in view of Van Damme et al. Claim 53 has been cancelled by this amendment, making the rejection of this claim moot.

Finally, regarding the rejection over Johnson et al. (U.S. Patent No. 6,336,965), the Examiner states in paragraph 13 of the Office Action that this reference has a common inventor with the present application and constitutes prior art only under 35 U.S.C. 102(e) based on the earlier effective U.S. filing date. Since Johnson et al. and the present application are owned by the same assignee, namely Cabot Corporation, 35 U.S.C. §103(c) applies and therefore, this rejection is not proper. Copies of the recorded Assignments for the respective applications are attached for the Examiner's convenience. Applicants respectfully request that the rejection over U.S. Patent No. 6,336,965 be withdrawn.

Therefore, Applicants believe that claims 23-48 and 50-55 are patentable over Johnson et al. in view of Van Damme et al., and respectfully request that this rejection be withdrawn.

Claims 1-22 and 83-90:

The Examiner has rejected the above-identified claims as being unpatentable over Van Damme et al (EP 0 803 772 A2) or Grabley et al (WO 98/31550) in view of Adams et al. (U.S. Patent No. 5,698,016). Applicants respectfully disagree.

In paragraph 16 of the Office Action, the Examiner states that Van Damme et al. and Grabley et al. teach making the instant printing plates with the exception of using the modified pigment set forth. The Examiner also states that Adams et al. teaches using the pigment when

carbon black in conventional compositions. The Examiner concludes that, with respect to claims 1-22 and 83-90, the use of the pigments of Adams et al. as the carbon black of Van Damme et al. or Grabley et al. would have been prima facie obvious to enhance pigment dispersibility as set forth in Adams et al. In particular, the Examiner concludes that, since Adams et al. is directed to the improvement of carbon blacks with respect to dispersion stability, and their approach is taught for all coatings using carbon black generally, the solution is obvious from the prior art which contains the same solution for a similar problem.

In paragraph 17, the Examiner states that Applicant's previous arguments have been considered by they are not persuasive. Specifically, the Examiner states that Applicants have argued that, since Adams et al. does not disclose using their modified pigments in printing plates while Grabley et al. and Van Damme et al do not teach using modifications of Adams in their pigments, there is insufficient reason to combine these references. The Examiner responds by stating that it is the Examiner's belief that the problem to be solved by the present application is the need for improved dispersibility in polymer used to produce printing plates, and Adams et al. addresses this problem of dispersibility in coatings, with the same solution as Applicants. The Examiner concludes that the solution is obvious from the prior art which contains the same solution for a similar problem, i.e., dispersibility of carbon black in a carrier or liquid vehicle. Finally, the Examiner points out that Adams et al. addresses increased water dispersibility of the modified carbon products, hydrophobic dispersibility, and using compositions wherein resins, including acrylic resins, are used as conventional coating additives.

Regarding claims 1-22 and 83-90, claim 1 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises at least one modified pigment product comprising a pigment having attached at least one organic ionic group and at least one amphiphilic counterion, wherein the amphiphilic counterion has a charge opposite to that of the organic ionic group.

Applicants agree that Van Damme et al. and Grabley et al. show printing plates containing carbon black. Applicants also agree that Adams et al. teaches a solution to improving the dispersibility of a carbon black for certain uses, and this solution is also disclosed in the

present application. However, Applicants do not agree that this solution is therefore obvious when applied to printing plates. As the Examiner states, paragraph [0011] of the present application states that a problem to be solved is improved dispersibility of pigments such as carbon black in polymers used to produce printing plates. As also stated in paragraph [0011], “the effectiveness of pigments such as carbon black as a photothermal conversion material in a printing plate is dependent on the dispersibility of the pigment in the polymer.” However, Adams et al. does not disclose improved dispersibility in polymers. Rather, Adams et al. teaches a solution to improving the dispersibility of carbon black in ink and coating compositions. For example, Adams et al. teaches that the disclosed compositions and suspensions “can be incorporated into various formulations such as inks, coatings, and ink jet inks” (column 7, lines 55-58). Various types of aqueous and non-aqueous inks and coatings are described (see column 7, line 62 to column 10, line 5). Therefore, Adams et al. teaches the use of the disclosed modified carbon blacks in general inks and coating compositions. There is no teaching or suggestion in Adams et al. that the modified carbon blacks can be used in polymers and, in particular, the polymers used for a printing plate. Even though, as pointed out by the Examiner, some of the compositions of Adams et al. include resins such as acrylic resins as conventional coating additives, these are still coating compositions. There is no teaching or disclosure that the modified carbon black of Adams et al. are dispersible in the resin itself or that any resulting polymer composition would be useful in a printing plate.

Furthermore, there is no disclosure anywhere in Adams et al. that the coating compositions can be used to prepare printing plates. Coating compositions can be used in a wide variety of applications, including paints and varnishes (which are disclosed in Adams et al.). There is no mention of printing plates in this reference. Without such a disclosure one skilled in the art would not be motivated to combine Grabley et al or Van Damme et al. with Adams et al. Frankly, Adams et al. is non-analogous art.

Applicants also note that, in one embodiment, Adams et al. teaches a flexographic printing ink using the disclosed modified carbon blacks. However, there is no teaching or suggestion that these modified carbon blacks can be used in the printing plate to which this ink

may be applied. Thus, even if one skilled in the art were to combine either Van Damme et al. or Grabley et al. with Adams et al., Applicants believe that the result would be the application of the flexographic ink of Adams et al. to the plates of either Van Damme et al. or Grabley et al.

Therefore, since Adams et al. does not teach or suggest the disclosed modified carbon blacks in a polymer of a printing plate, Applicants believe that one skilled in the art would not be motivated to combine Adams et al. with a reference teaching the use of conventional carbon black in a polymer of a printing plate, such as Van Damme et al. or Grabley et al. A general disclosure of a solution to improving the dispersibility of carbon black in an ink or coating composition would not lead one skilled in the art to use this solution to improve the dispersibility of a pigment such as carbon black in a polymer of a printing plate.

Applicants therefore believe that claim 1 is patentable over Van Damme et al. or Grabley et al. in view of Adams et al. Claims 2-22 and 83-90, which depend either directly or indirectly from claim 1, recite further embodiments of the present invention and, for at least the reasons discussed above, should also be patentable over Van Damme et al. or Grabley et al. in view of Adams et al. Therefore, Applicants believe that claims 1-22 and 83-90 are patentable over Van Damme et al. or Grabley et al. in view of Adams et al., and respectfully request that this rejection be withdrawn.

Rejection of Claims under 35 U.S.C. § 102(b)

Claims 74, 76, 79, and 81-82

The Examiner has rejected the above-identified claims as being anticipated by Sypek et al. (U.S. Patent No. 5,286,594). Applicants respectfully disagree.

In paragraph 18 of the Office Action, the Examiner refers to specific portions of Sypek et al. including Examples 1, 2, and 9. In Example 1, the Examiner refers to 57-760002 chip as coated with an acrylamide substituted cellulose ester, and mixed in with an acrylamide substituted cellulose ester), Example 2 wherein 79R27C chip is the pigment coated with polyvinylbutyral polymer and is mixed with a cellulose polymer. Referring to Example 2, the Examiner states

that 79R27C is the pigment coated with polyvinylbutyral polymer and is mixed with a cellulose polymer. Referring to Example 3, the Examiner states that chip 79R84C is used as encapsulated pigment coated with an acrylated polyurethane, i.e., an acrylic polymer, and polyvinylbutyral polymer encasing perylene maroon pigment. The Examiner further states that the pigment of Sypek et al. is radiation absorptive inherently as evidenced by its being used to produce a color in the lithographic printing plates made. The Examiner concludes that these example plates of Sypek et al. anticipate the plates of claims 74, 76, 79, and 81-82 wherein the chips are inherently possessed of coatings that are not extractable by an organic solvent, and therefore the coated pigments of Sypek et al. are held to be modified pigment products.

In paragraph 19, the Examiner states that Applicant's previous arguments have been considered by they are not persuasive. Specifically, the Examiner states that Applicants believe that, as with conventional dispersants, these can be substantially removed by extraction but does not provide any evidence supporting this supposition. The Examiner then states that the polymers of Sypek et al. inherently are not substantially extractable by an organic solvent and therefore maintains the rejection.

Regarding claims 74, 76, 79, 81, and 82, claim 74 recites a printing plate comprising a substrate and a radiation-absorptive layer. The radiation-absorptive layer comprises at least one modified pigment product comprising a pigment that is at least partially coated with one or more polymeric coatings, wherein the polymeric coating is not substantially extractable by an organic solvent.

In comparison, Sypek et al. shows a printing plate having a photosensitive coating composed of a photopolymerizable combination which includes a photopolymerizable pigment dispersion. The pigment dispersion contains an organic or inorganic pigment dispersed in a photopolymerizable dispersant or a combination of a photopolymerizable dispersant and a non-photopolymerizable dispersant (see column 6, lines 26-30). Pigment dispersions prepared with a photopolymerizable dispersant are thus capable of participating in the photopolymerization reaction, thereby become an integral part of the photopolymer formed during exposure, adding strength (see column 6, lines 7-16).

Sypek et al. therefore relates only to a pigment in combination with a dispersant. This is not the modified pigment used in the printing plate of the present invention in which the pigment is at least partially coated with one or more polymeric coatings that cannot be substantially extracted by an organic solvent. Rather, Sypek et al. relates only to conventional dispersion technology, utilizing, in some embodiments, photopolymerizable dispersants. There is no teaching or suggestion in Sypek et al. that any of these dispersants form a coating that is not substantially extractable by an organic solvent. Without such a teaching, one skilled in the art of dispersants would expect the photopolymerizable dispersant to act the same way as any conventional dispersant would, establishing an equilibrium between the pigment surface and the medium into which it is dispersed. This is an active equilibrium – that is, if some of the dissolved dispersant is removed, more of the dispersant on the pigment surface would disassociate into the medium over time. This means that the dispersant is removable from the pigment and would therefore be capable of being substantially extracted off of the pigment.

Therefore, Applicants believe that the Examiner has incorrectly equated the pigment dispersion of Sypek et al. – comprising a pigment and a photopolymerizable dispersant - with the modified pigment product of the present invention – comprising a pigment that is at least partially coated with one or more polymeric coatings, wherein the polymeric coating is not substantially extractable by an organic solvent. While the dispersants described in Sypek et al. must be bound to the pigment, one skilled in the art would recognize that, as with conventional dispersant technology, the photopolymerizable dispersants can be substantially removed by extraction. It is only after irradiation that a reaction occurs to immobilize the pigment. The Examples cited by the Examiner, being examples of the invention of Sypek et al., would therefore also be pigments containing dispersants which can be removed by extraction. Thus, one skilled in the art would not equate the dispersant used to prepare the pigment dispersion of Sypek et al. with the polymer coated pigment used in the present application, which cannot be substantially extracted.

Applicants therefore believe that Sypek et al. does not disclose the printing plate of claim 74 and therefore Sypek et al does not anticipate this claim. Claims 76, 79, and 81-82, which


depend either directly or indirectly from claim 74, recite further embodiments of the present invention and, for at least the reasons discussed above, are also not anticipated by Sypek et al.

Therefore, Applicants believe that claims 74, 76, 79, and 81-82 are not anticipated by Sypek et al. and respectfully request that this rejection be withdrawn.

Conclusion

In view of the foregoing remarks, Applicant believes that this application is considered to be in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would further expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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